

Water Jet Cutter Technology

Waste Reduction Improvements



In 2004, the Oak Ridge National Laboratory's Facilities Management Division (Facilities and Operations Directorate) implemented a water jet cutter in Building 7012. This system provides a much safer, cleaner, efficient, and versatile one-step process for machining metal and significantly reduced waste generation when compared to its predecessor, a multi-step process using a plasma arc torch welder. In 2005, the Fabrication Division continued to examine the new system for ways to further reduce waste generation, and identified an additional upgrade, a solids removal system, which was projected to reduce process waste water generation by 50 percent.



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Consequently, this source reduction upgrade initiative:

- improved safety – improved ergonomics and reduced sludge generation
- improved operational efficiency – cleaner machine, reduced water usage, and eliminated sampling of wastewater
- reduced process wastewater and sludge generation (approximately 11,000 kg per year)
- resulted in an approximate cost avoidance of \$5,000 per year.

This source reduction upgrade initiative had a one-time implementation cost of approximately \$15,000 for the solids removal system including two hoppers to minimize down time. This system removes the garnet grit generated from the process on a continuous basis, which allows the machine to stay cleaner and reduces the annual water usage and process waste water generation by approximately 3,000 gallons per year. This initiative also has a downstream benefit of reducing the amount of wastewater requiring treatment and resulting regulated sludge waste at the wastewater treatment facility.



Solids Removal System with Hopper

